

## CLAIMS

What is claimed is:

1. A system for measuring a weight upon a seating surface, said system comprising:  
at least one ferromagnetic element mechanically coupled between the seating surface and a vehicle floor such that strain is induced in said at least one ferromagnetic element responsive to the weight thereon; and  
a first sensor comprising (i) a magnet generating a magnetic field and (ii) an inductor, said magnet and inductor mounted adjacent said ferromagnetic element, said magnetic field altered by said strain in said ferromagnetic element, said inductor generating a signal based upon the alteration in said magnetic field.
2. The system of claim 1 wherein said at least one ferromagnetic element is a plurality of ferromagnetic elements, which together receive all of the weight on the seating surface.
3. The system of claim 1 wherein said seating surface is on a seat and said at least one ferromagnetic element is coupled between a vehicle floor and a bracket on said seat.
4. The system of claim 3 wherein said at least one ferromagnetic element is coupled directly between the vehicle floor and the bracket on said seat.
5. The system of claim 3 further including a fastener connecting the seat to the floor through said at least one ferromagnetic element.
6. The system of claim 1 wherein said at least one ferromagnetic element receives all of the weight on the seating surface.

7. The system of claim 6, wherein said magnet is an electromagnet and said inductor includes a coil.
8. The system of claim 7, further including an actuator for a vehicle safety device, said actuator actuating said vehicle safety device based upon said signal from said first sensor.

9. A method for activating a switch including the steps of:
  - a) measuring a strain in a first element;
  - b) activating a first vehicle function based upon said step a).
10. The method of claim 9 further including the steps of:
  - c) measuring strain in a second element;
  - d) activating a second vehicle function based upon said step c).
11. The method of claim 10 wherein said step a) is performed utilizing a magnetostrictive sensor.
12. The method of claim 11 wherein said step c) is performed using said magnetostrictive sensor.
13. The method of claim 12 wherein the first element and the second element are each configured for being mechanically coupled between a seating surface and a vehicle floor, the method further including the step of determining a weight upon the seating surface based upon said steps a) and c).

14. A system for measuring a weight upon a seating surface, the system comprising:
  - a plurality of ferromagnetic elements mechanically for coupling between the seating surface and a vehicle floor such that strain is induced in the plurality of ferromagnetic elements responsive to the weight on the seating surface; and
  - a plurality of sensors each comprising (i) a magnet generating a magnetic field and (ii) an inductor, each sensor mounted adjacent one of the plurality of ferromagnetic elements, the magnetic field from each sensor altered by the strain in the adjacent ferromagnetic element, the inductor generating a signal based upon the alteration in the magnetic field.
15. The system of claim 14 wherein the plurality of ferromagnetic elements are configured to receive all of the weight on the seating surface.
16. The system of claim 14 wherein the plurality of ferromagnetic elements are mechanically coupled between the seating surface and the vehicle floor.
17. The system of claim 14 further including a controller receiving information based upon the signals from the inductor in each of the sensors.
18. The system of claim 17 wherein the controller determines a position of an occupant on the seating surface based upon the information.
19. The system of claim 17 wherein the controller determines the weight on the seating surface based upon the information.

20. The system of claim 19 wherein the plurality of ferromagnetic elements are mechanically coupled between the seating surface and the vehicle floor.